

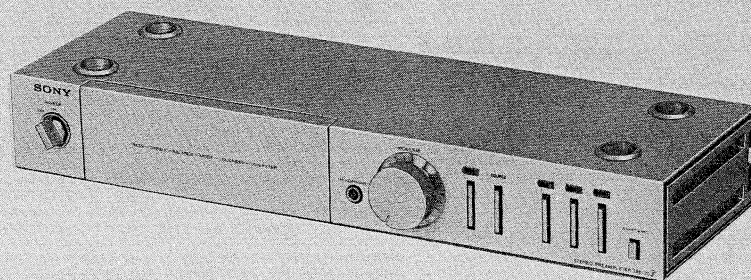
# TAE-20F/20FB

*TAE-20F (Panel : silver)*

*US Model  
AEP Model  
E Model  
UK Model*

*TAE-20FB (Panel : black)*

*Canadian Model  
AEP Model*



## STEREO PREAMPLIFIER

### SPECIFICATIONS

#### GENERAL

- Power Requirements:** 120 V ac, 60 Hz (US, Canadian model)  
220 V ac (or 240 V ac adjustable by authorized Sony personnel), 50/60 Hz (AEP model)  
120, 220 or 240 V ac adjustable, 50/60 Hz (E model)  
240 V ac (or 220 V ac adjustable by authorized Sony personnel), 50 Hz (UK model)
- Power Consumption:** 10 W
- AC Outlets:** 4 switched, total 450 W  
1 unswitched, 100 W (US, Canadian model)  
2 switched, total 450 W (AEP (Up to Serial No. 550,000), E model)  
2 unswitched, total 250 W } (UK model)  
2 switched, total 300 W
- Dimensions:** Approx. 430 (w) x 70 (h) x 160 (d) mm  
17 (w) x 2 <sup>3</sup>/<sub>4</sub> (h) x 6 <sup>1</sup>/<sub>8</sub> (d) inches  
including projecting parts and controls
- Weight:** Approx. 2.7 kg, 6 lb net

— continued on next page —

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

#### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHEMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

# SONY<sup>®</sup>

## SERVICE MANUAL

# TAE-20F/20FB

## AMPLIFIER SECTION

### Input:

	Sensitivity	Impedance	Maximum input capability (at 1kHz, 0.01% distortion)	S/N (weighting network)
PHONO with cartridge selector set at MM	-50 dB (2.5 mV)	50 k $\Omega$	-10 dB (250 mV)	85 dB (A)
PHONO with cartridge selector set at MC	-70 dB (0.25 mV)	100 $\Omega$	-32 dB (20 mV)	70 dB (A)
TUNER TAPE AUX	-14 dB (150 mV)	50 k $\Omega$	—	95 dB (A)

### Outputs:

	Output level	Output impedance
REC OUT	150 mV (15 V max.)	10 k $\Omega$
OUTPUT	1 V (15 V max.)	1 k $\Omega$

0 dB = 0.775 V

**Headphones:** Load impedance 8  $\Omega$

**Harmonic Distortion:** Less than 0.01 % at rated output

### IM Distortion:

(60Hz : 7kHz = 4 : 1): Less than 0.03 % at rated output

**Frequency Response:** PHONO

RIAA equalization curve  $\pm 0.3$  dB  
TUNER, TAPE, AUX  
10 Hz — 100 kHz  $\pm 0.5$  dB

**Low Filter:** 12 dB/oct. below 20 Hz

**Residual Noise:** Less than 40  $\mu$ V (A weighting, IHF)

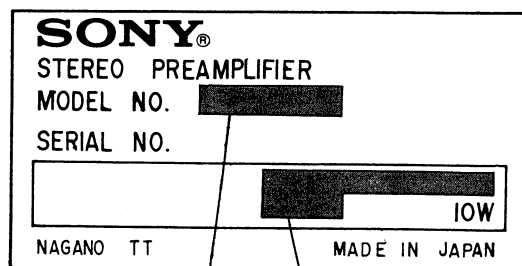
**Tone Controls:** BASS:  $\pm 10$  dB at 100 Hz  
TREBLE:  $\pm 10$  dB at 10 kHz

**Loudness Control:**

(att. 30dB): +8 dB at 100 Hz

## MODEL IDENTIFICATION

### Specification Label



TAE-20F

{ AC 120V  
AC 220V  
AC 120, 220, 240V  
AC 240V

60Hz. .... (US model)  
50Hz. .... (AEP model)  
50/60Hz .... (E model)  
50Hz. .... (UK model)

TAE-20FB

{ AC 220V  
AC 120V

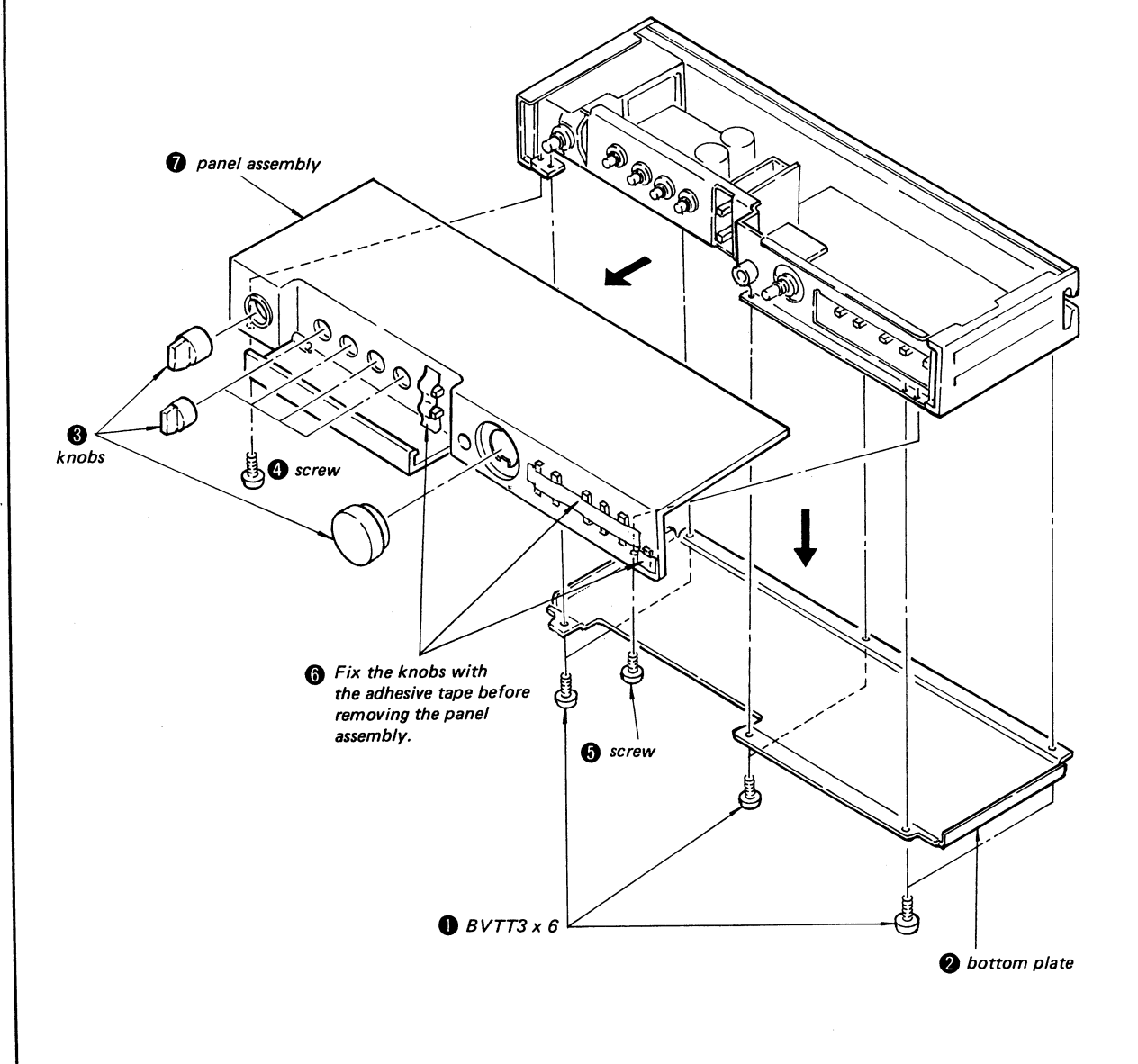
50Hz. .... (AEP model)  
60Hz. .... (Canadian model)



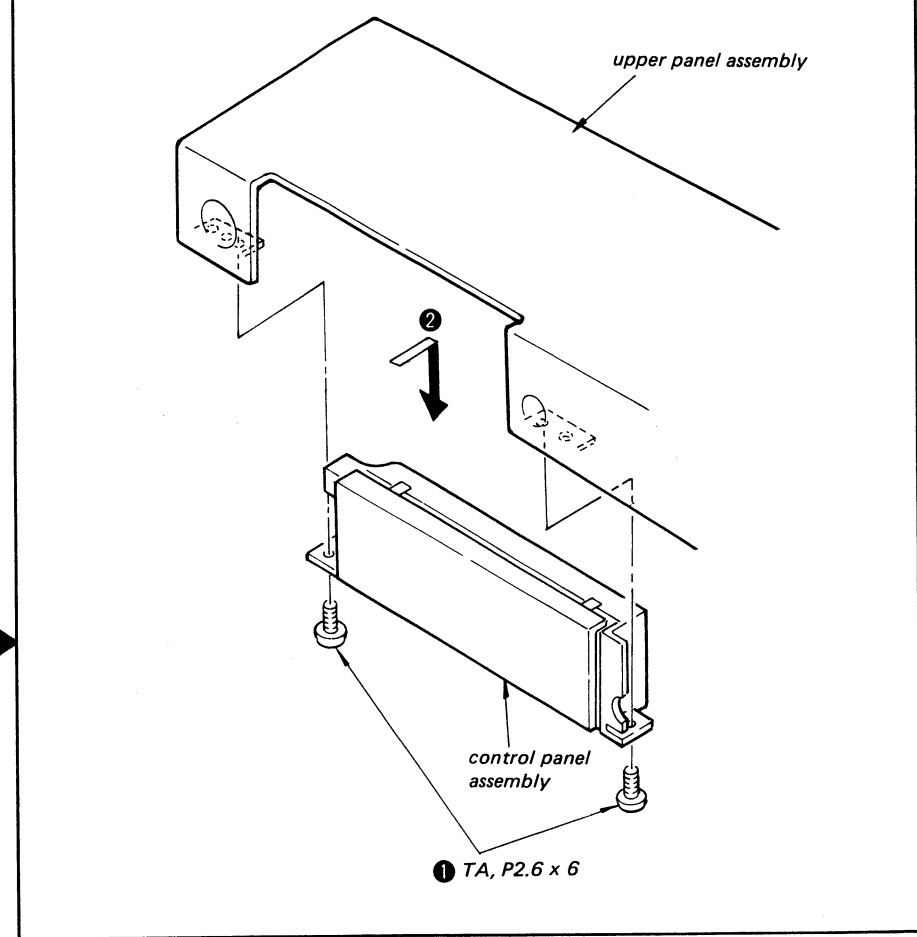
## SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

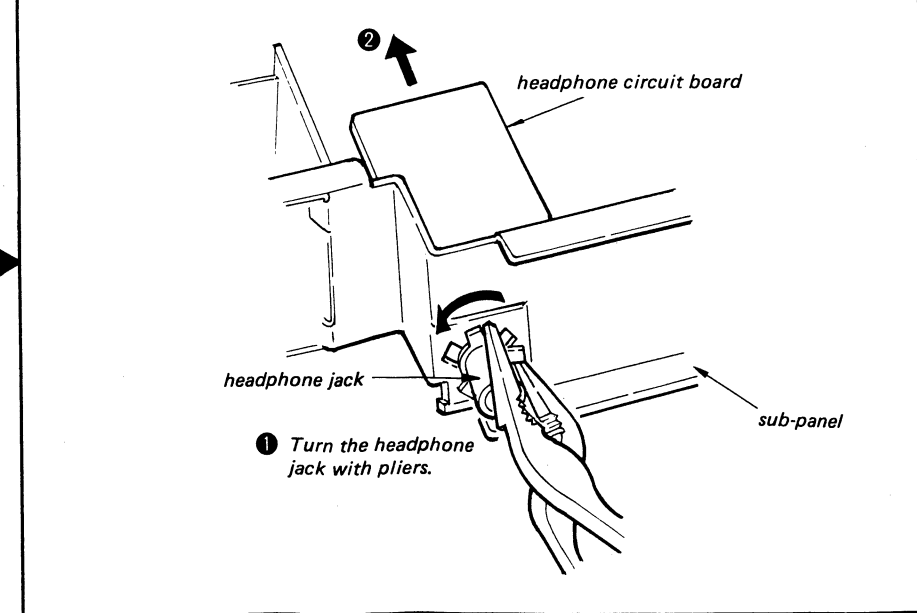
### PANEL ASSEMBLY and BOTTOM PLATE



### CONTROL PANEL ASSEMBLY



### HEADPHONE CIRCUIT BOARD



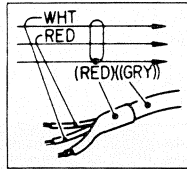


# SECTION 3 DIAGRAMS

## 3-1. MOUNTING DIAGRAMS — Conductor Side —

### Note:

- Color code of sleeving over the end of the jacket.

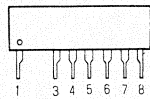


- B+ pattern
- B- pattern
- Signal Path
  - L-CH
  - R-CH
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} = \mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalum.
- All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  $\text{k}\Omega = 1000\Omega$ ,  $\text{M}\Omega = 1000\text{k}\Omega$

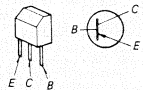
### Replacement Semiconductors

For replacement, use semiconductors except in ( ).

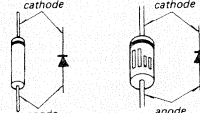
IC101, 151  
IC201, 251 : CX550



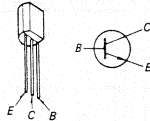
Q303: 2SB605



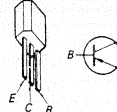
D302: RD5.6E (EQA01-06R)



Q101, 151  
Q102, 152 : 2SC2014



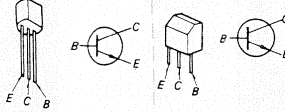
Q304: 2SA1027R (2SA844)



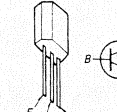
D401: 1S1555



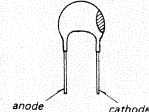
Q301: 2SC1475 (2SD571)



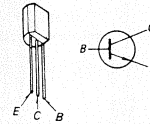
Q403-406: 2SC1636



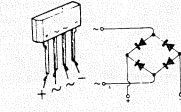
D402: VD1220 (VD1220L)



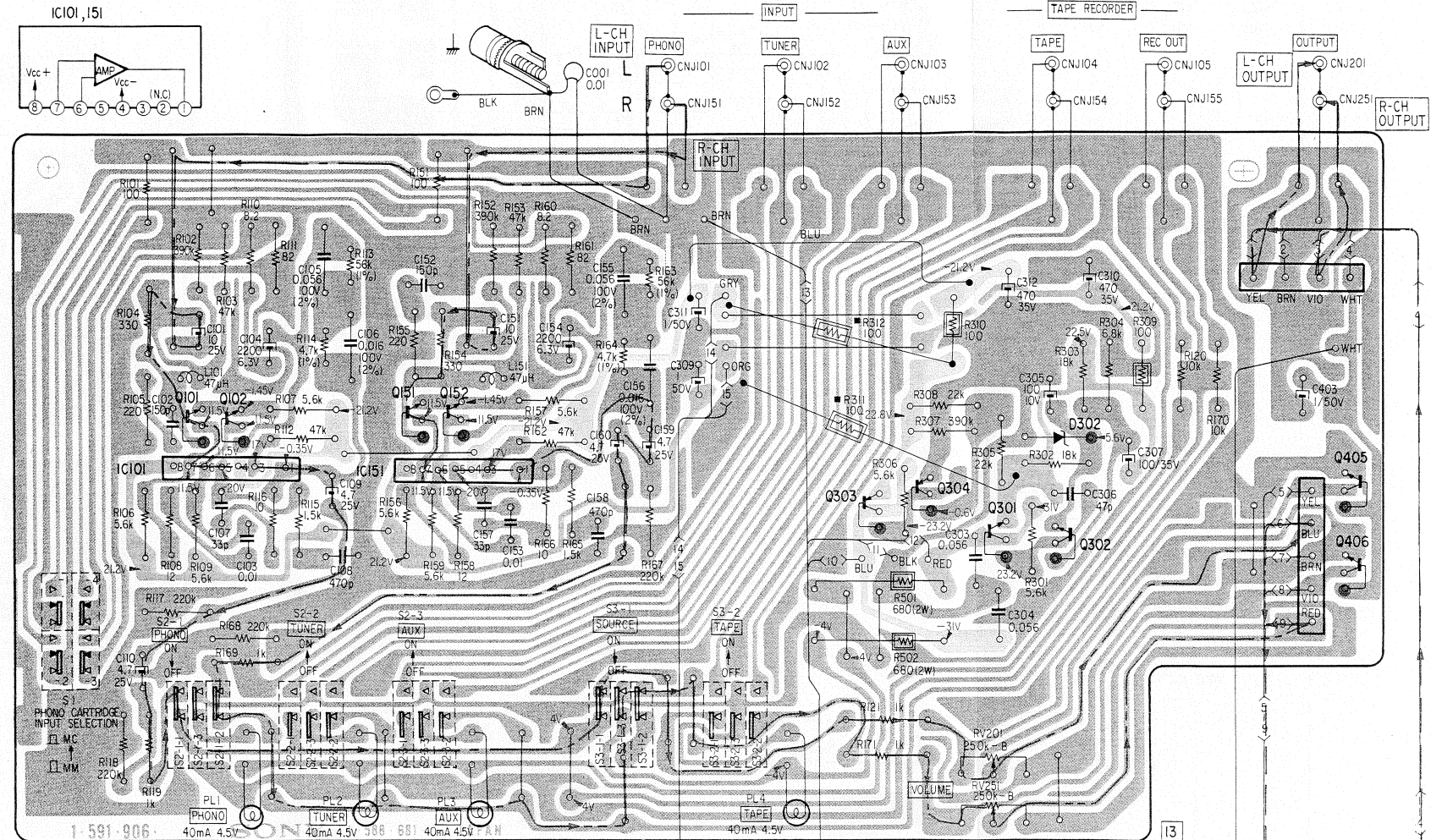
Q302  
Q401, 402 : 2SC1364 (2SC945)



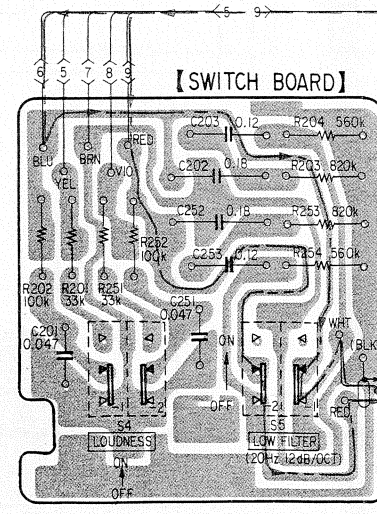
D301: S1VB20 (S1VB10)



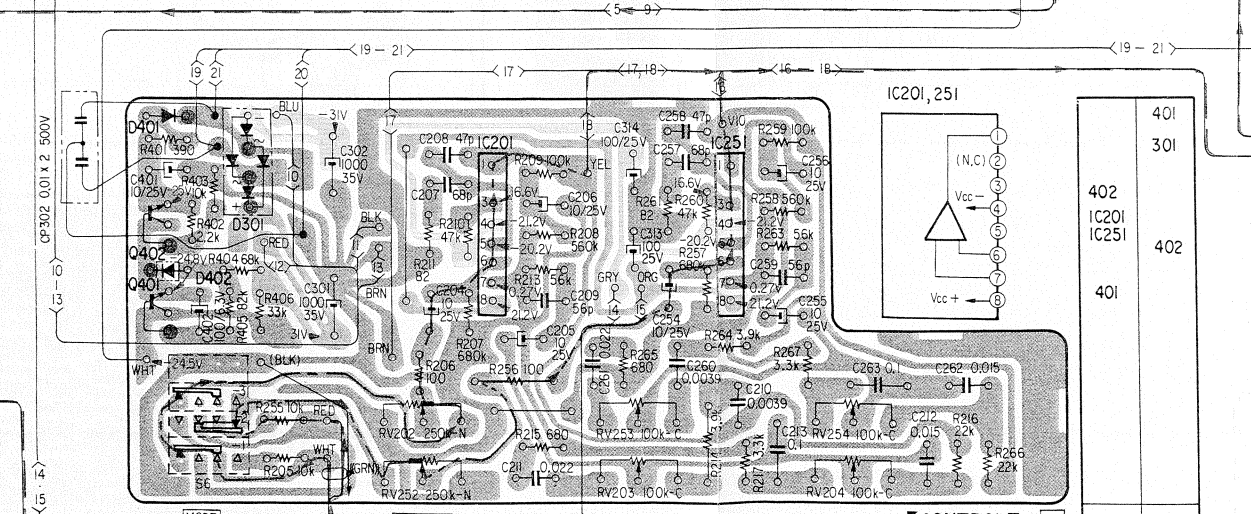
Q	IC	101	102	151	152	303	304	301	302	405	Q
		IC101		IC151						406	IC
D									302		D



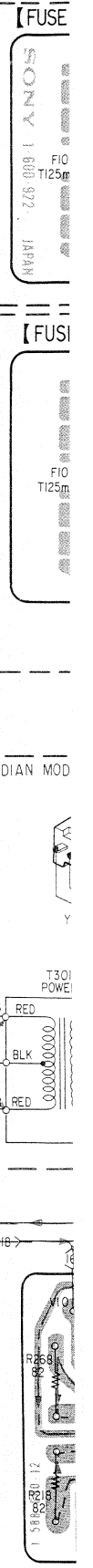
【MAIN BOARD】



【SWITCH BOARD】

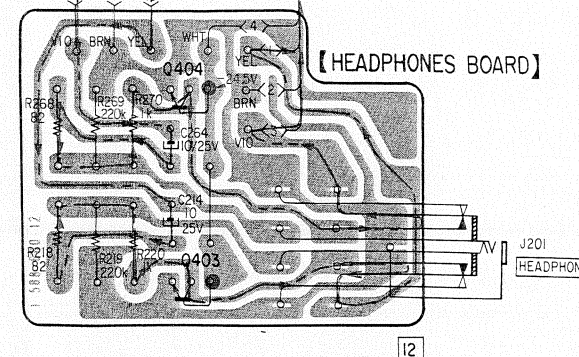
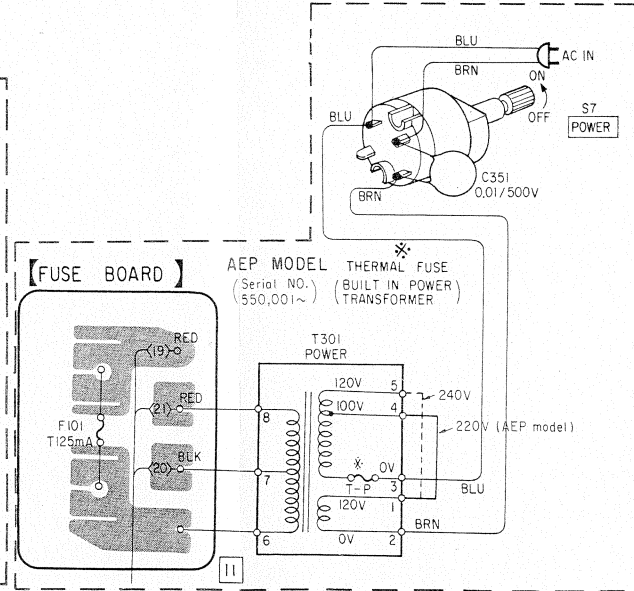
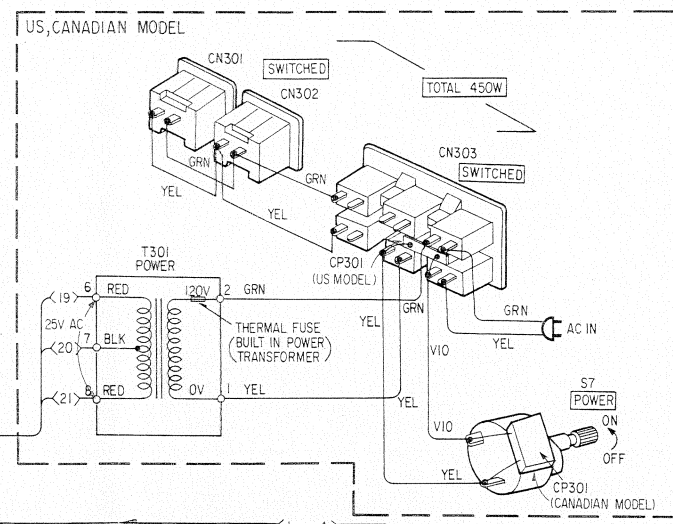
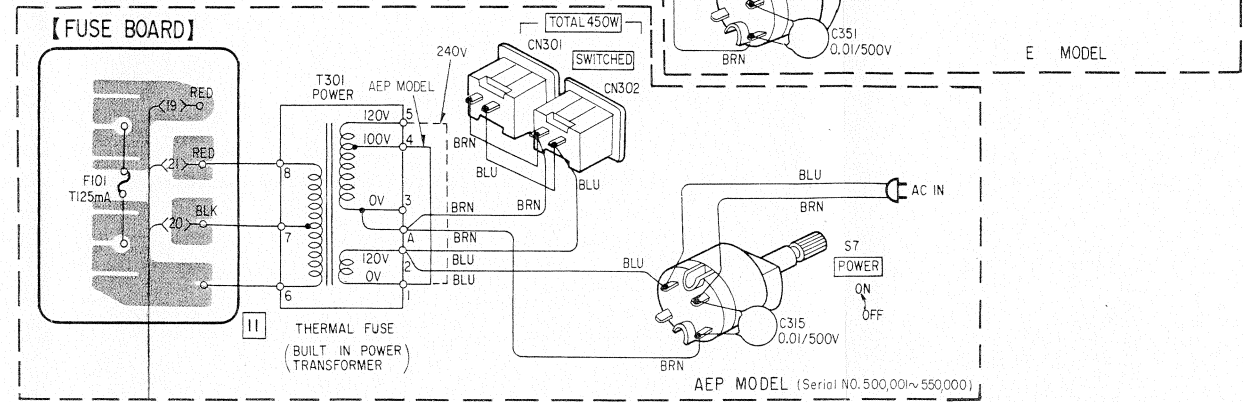
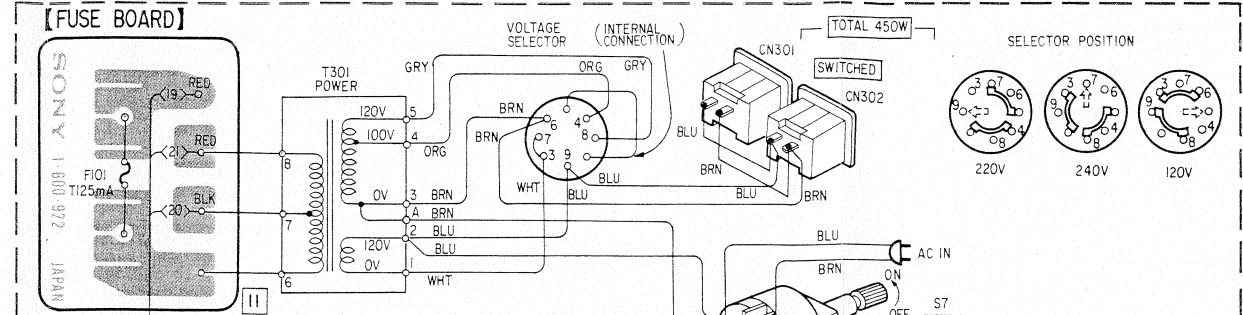
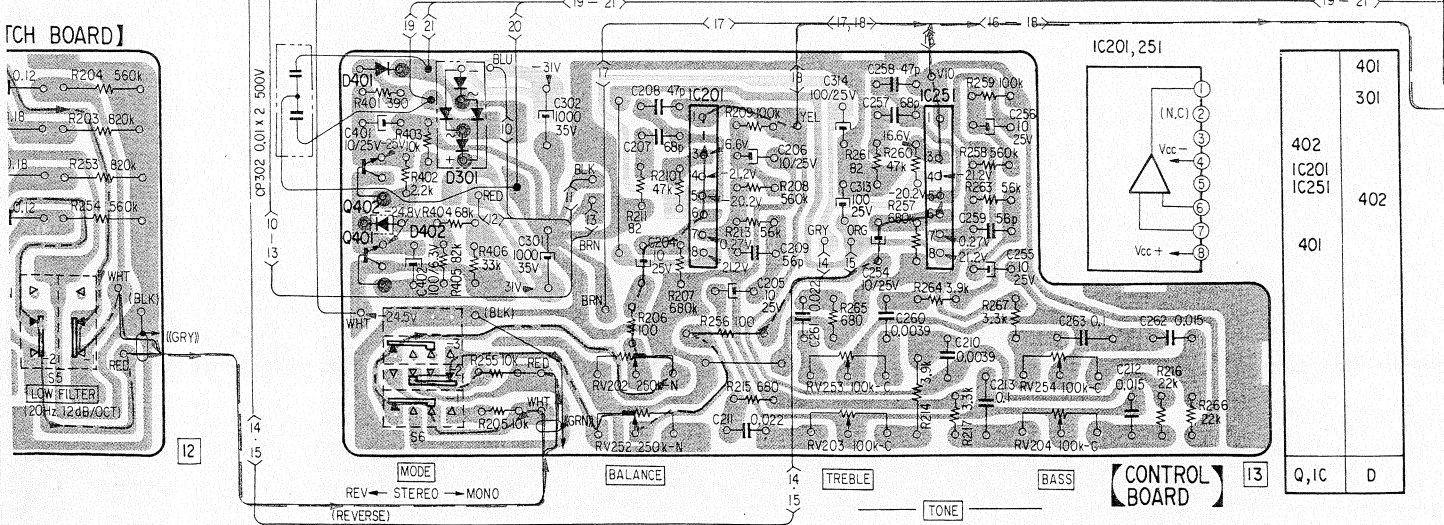
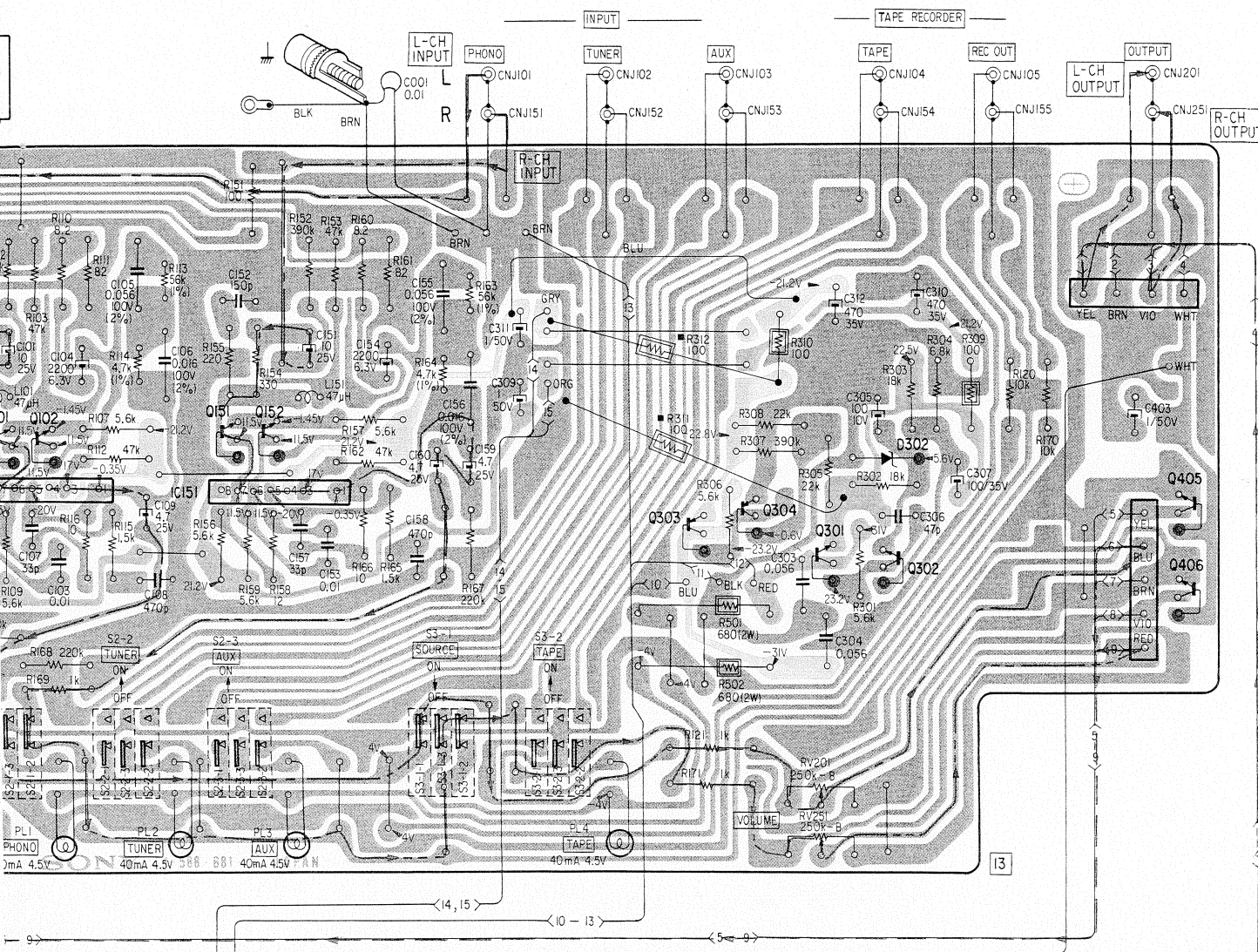


【CONTROL BOARD】





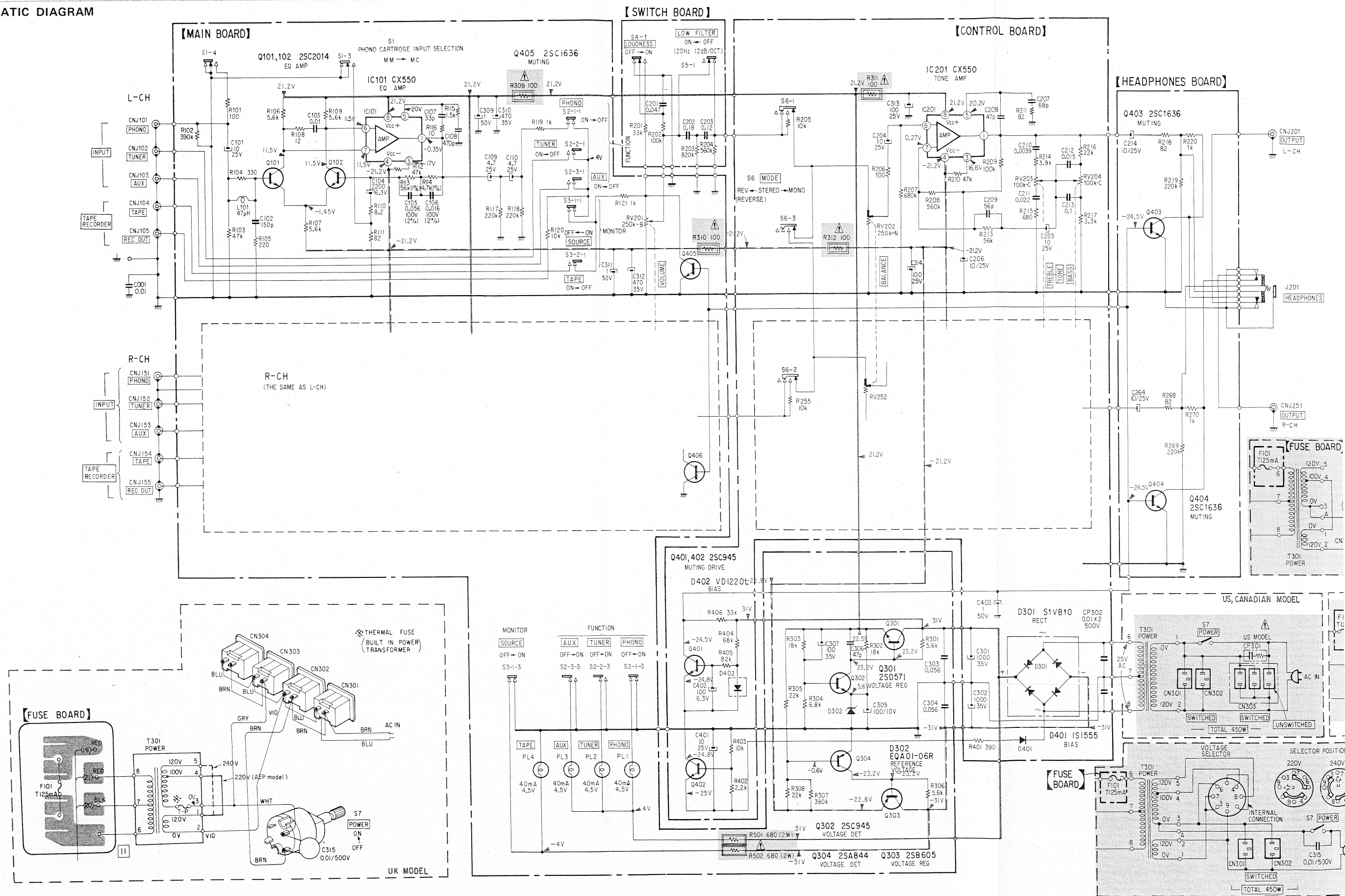
01	102	151	152	303	304	301	302	405	Q
IC101		IC151						406	IC
							302		D

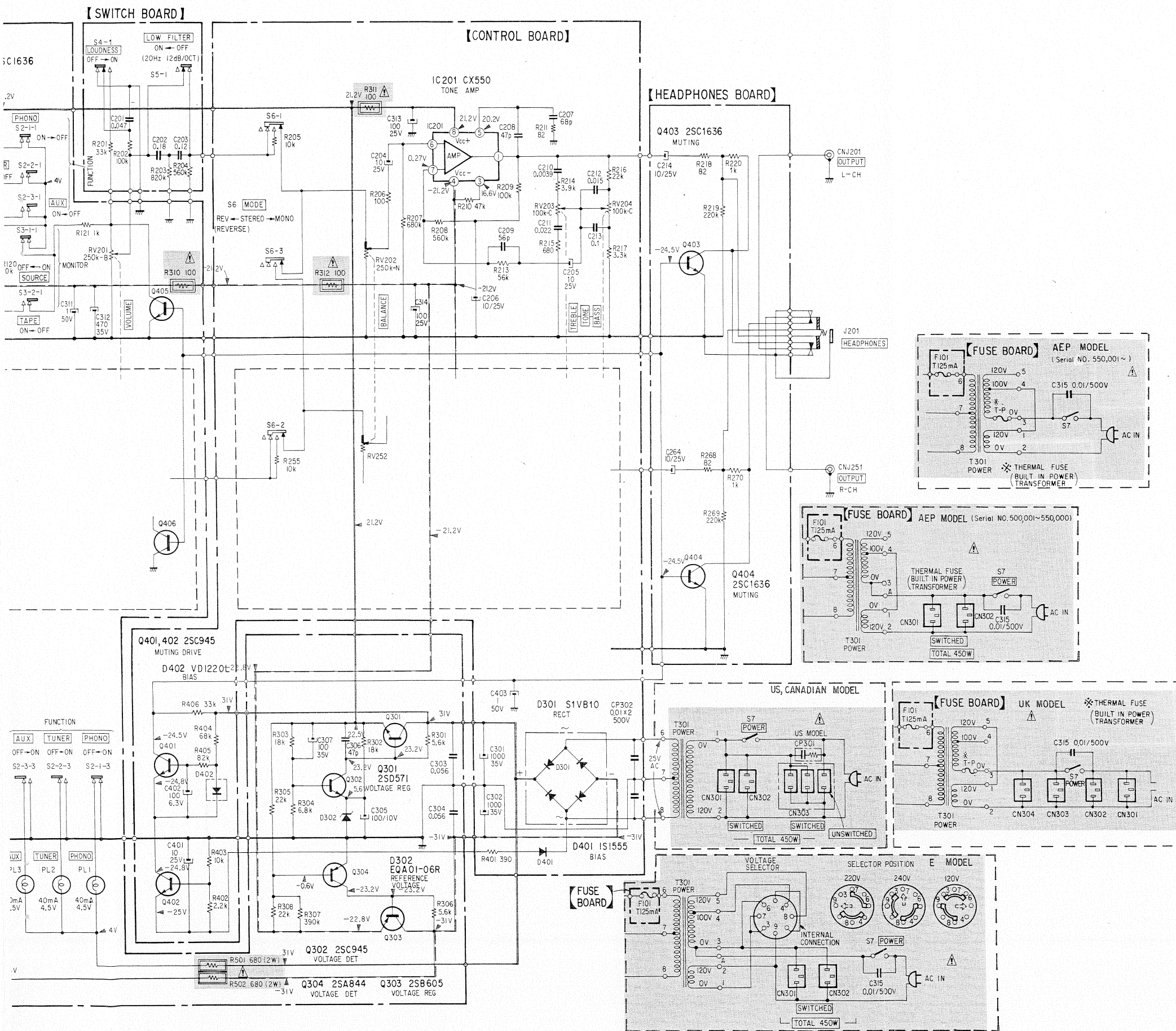


UK model : See page 9.




### 3-2. SCHEMATIC DIAGRAM






- Note:**
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} : \mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalum.
  - All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  $\text{k}\Omega = 1000\Omega$ ,  $\text{M}\Omega = 1000\text{k}\Omega$
  - $\text{---}\square\text{---}$  : nonflammable resistor.
  - 1% indicates component tolerance.
  - Readings are taken under no-signal conditions with a VOM (20k $\Omega$ /V).
  - Switch

Ref. No.	Switch	Position
S1	PHONO CARTRIDGE INPUT SELECTION	MM
S2	FUNCTION	PHONO
S3	MONITOR	SOURCE
S4	LOUDNESS	OFF
S5	LOW FILTER	OFF
S6	MODE	STEREO
S7	POWER	OFF

**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



## SECTION 4

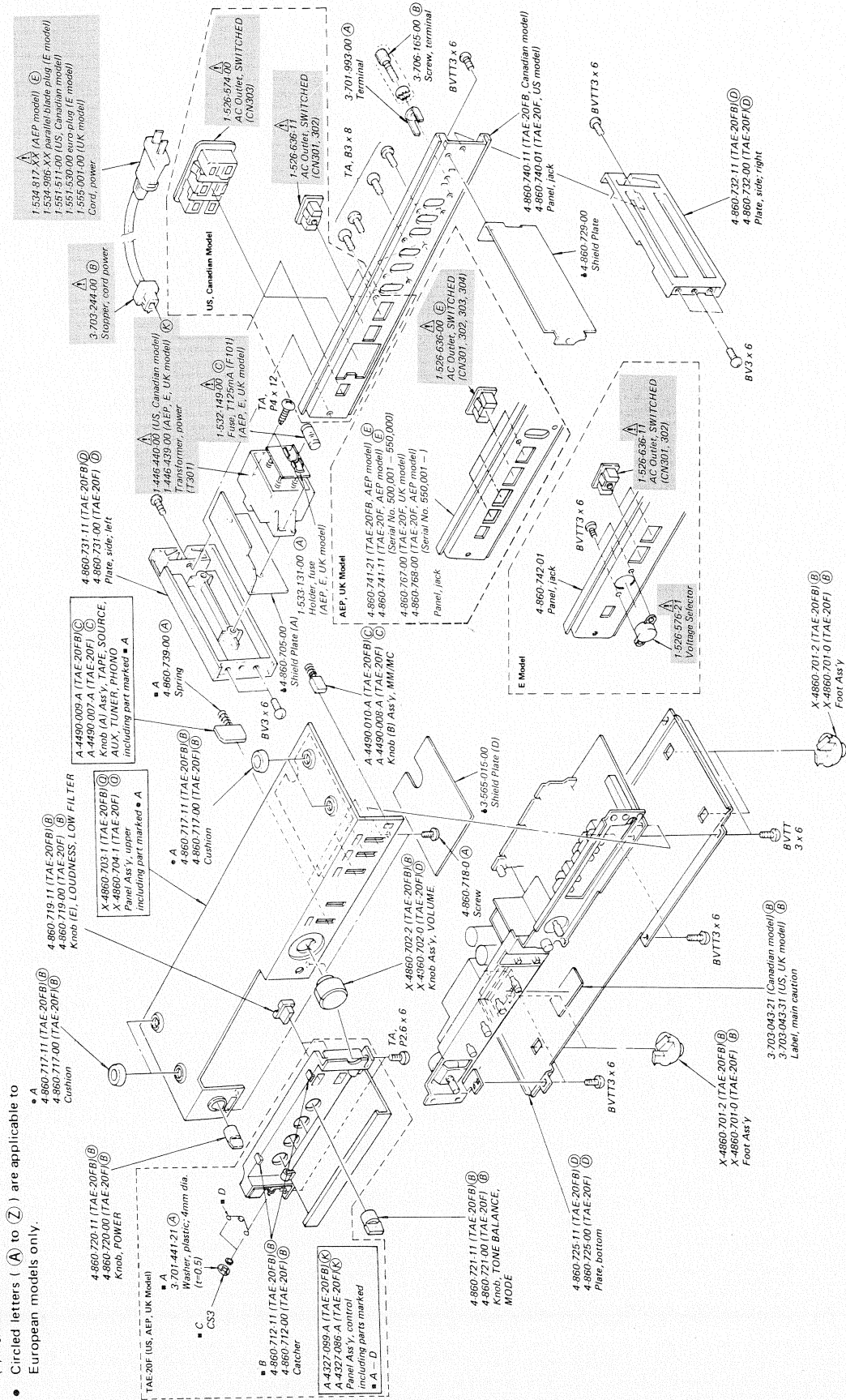
## EXPLODED VIEWS

4-1.

Note: Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

- Note:
- Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted.
  - Circled letters (A) to (Z) are applicable to European models only.

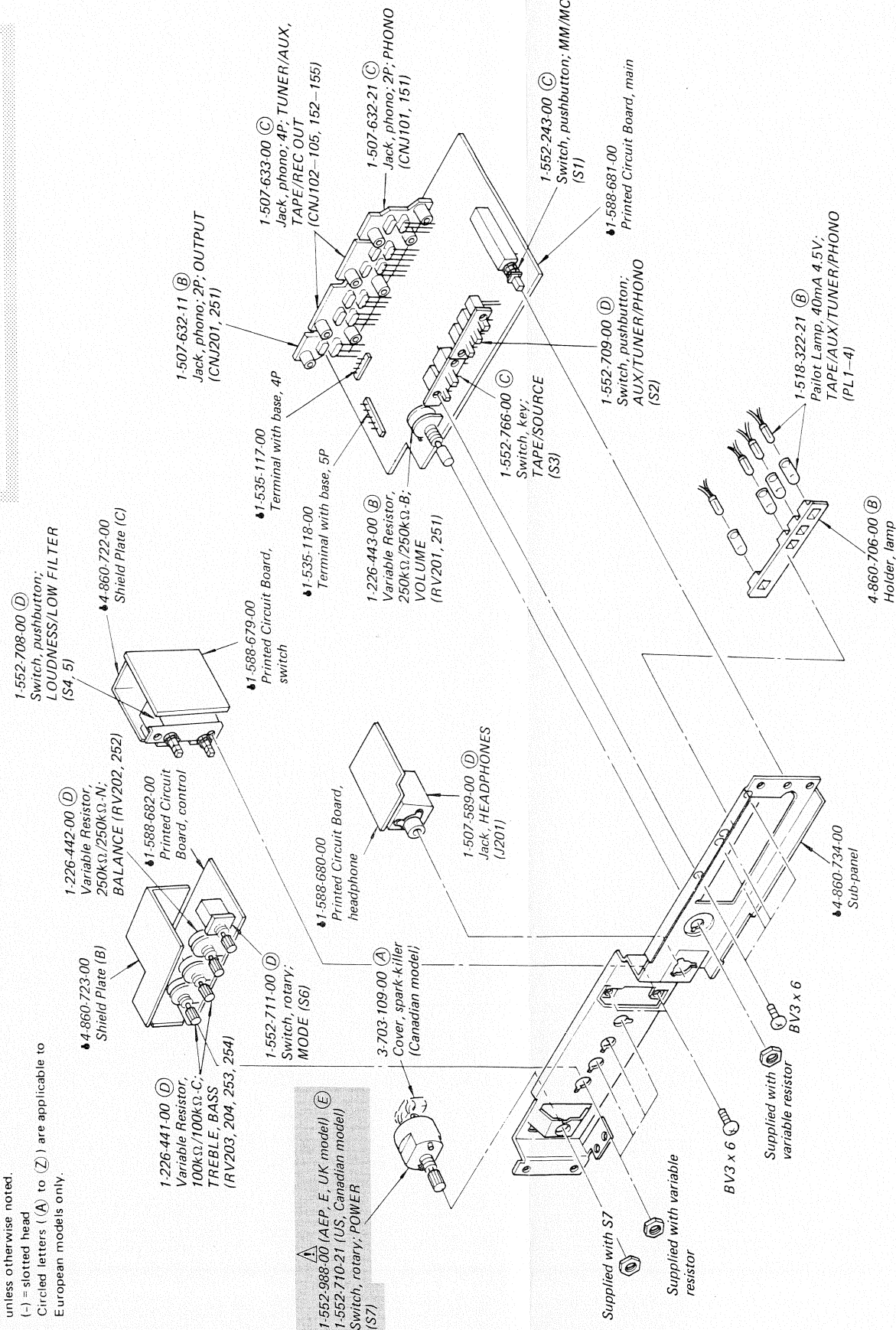


4-2.

Note: Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

- Note:
- Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted.
  - (-) = slotted head
  - Circled letters (A) to (Z) are applicable to European models only.



Ref. 1

Q101,  
Q102,  
Q301  
Q302,  
Q402  
Q303  
Q304

Q403-

IC101  
IC201D301  
D302D401  
D402All res  
omitte  
numbe

C001

C101,  
C102,  
C103,  
C104,  
C105,C106,  
C107,  
C108,  
C109,  
C110,

Note:

SECTION 5  
ELECTRICAL PARTS LIST

Note: Circled letters (A to Z) are applicable to European models only.

Ref. No. Part No. Description

## SEMICONDUCTORS

## Transistors

Q101, 151 Q102, 152	8-765-493-00	D	2SC2014
Q301	8-760-413-10	D	2SC1475
Q302, 401 Q402	8-729-663-47	A	2SC1364
Q303	8-729-160-51	C	2SB605
Q304	8-729-612-77	B	2SA1027R
Q403-406	8-761-622-00	C	2SC1636

## ICs

IC101, 151 IC201, 251	8-759-305-00	D	CX550
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## Diodes

D301	8-719-511-20	D	S1VB20
D302	8-719-156-08	B	RD5.6E
D401	8-719-815-55	A	1S1555
D402	8-719-122-00	A	VD1220

## CAPACITORS

All resistors are in ohms. Common 1/4W carbon resistors are omitted. Refer to the list on the last page for their part numbers. p :  $\mu$ F, elect : electrolytic

C001	1-102-129-00	A	0.01		
C101, 151	1-123-329-00	B	10	25V	elect
C102, 152	1-101-361-00	A	150p		
C103, 153	1-108-804-00	B	0.01		mylar
C104, 154	1-123-300-00	B	2200	6.3V	elect
C105, 155	1-130-126-00	B	0.056	100V	film 2%
C106, 156	1-130-125-00	B	0.016	100V	film 2%
C107, 157	1-102-963-00	A	33p		
C108, 158	1-102-824-00	A	470p		
C109, 159 C110, 160	1-123-328-00	B	4.7	25V	elect

Note: Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No. Part No. Description

C201, 251	1-108-812-00	B	0.047		mylar
C202, 252	1-108-364-00	B	0.18		mylar
C203, 253	1-108-363-00	B	0.12		mylar
C204, 254 C205, 255 C206, 256	1-123-329-00	B	10	25V	elect
C207, 257	1-101-888-00	A	68p		
C208, 258	1-101-880-00	A	47p		
C209, 259	1-101-884-00	A	56p		
C210, 260	1-108-569-00	B	0.0039		mylar
C211, 261	1-108-808-00	B	0.022		mylar

C212, 262	1-108-806-00	B	0.015		mylar
C213, 263	1-108-251-00	B	0.1		mylar
C214, 264	1-123-329-00	B	10	25V	elect

C301, 302	1-121-945-00	B	1000	35V	elect
C303, 304	1-108-361-00	B	0.056		mylar
C305	1-123-307-00	B	100	10V	elect
C306	1-101-880-00	B	47p		
C307	1-123-345-00	B	100	35V	elect

C309	1-123-352-00	B	1	50V	elect
C310	1-123-348-00	B	470	35V	elect
C311	1-123-352-00	B	1	50V	elect
C312	1-123-348-00	B	470	35V	elect
C313, 314	1-123-333-00	B	100	25V	elect

C315	1-130-196-00	D	0.01	500V (AEP, E, UK model)	
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C401	1-123-329-00	B	10	25V	elect
C402	1-123-295-00	B	100	6.3V	elect
C403	1-123-352-00	B	1	50V	elect

## RESISTORS

All resistors are in ohms. Common 1/4W carbon resistors are omitted. Check schematic diagram for their values.

R309, 310 R311, 312	1-221-522-00	A	100		nonflammable
R501, 502	1-206-660-00	B	680	2W	metal oxide (nonflammable)
RV201, 251	1-226-443-00	B	Variable, 250k $\Omega$ /250k $\Omega$ -B; VOLUME		
RV202, 252	1-226-442-00	D	Variable, 250k $\Omega$ /250k $\Omega$ -N; BALANCE		
RV203, 253 RV204, 254	1-226-441-00	D	Variable, 100k/100k-C; TREBLE/BASS		

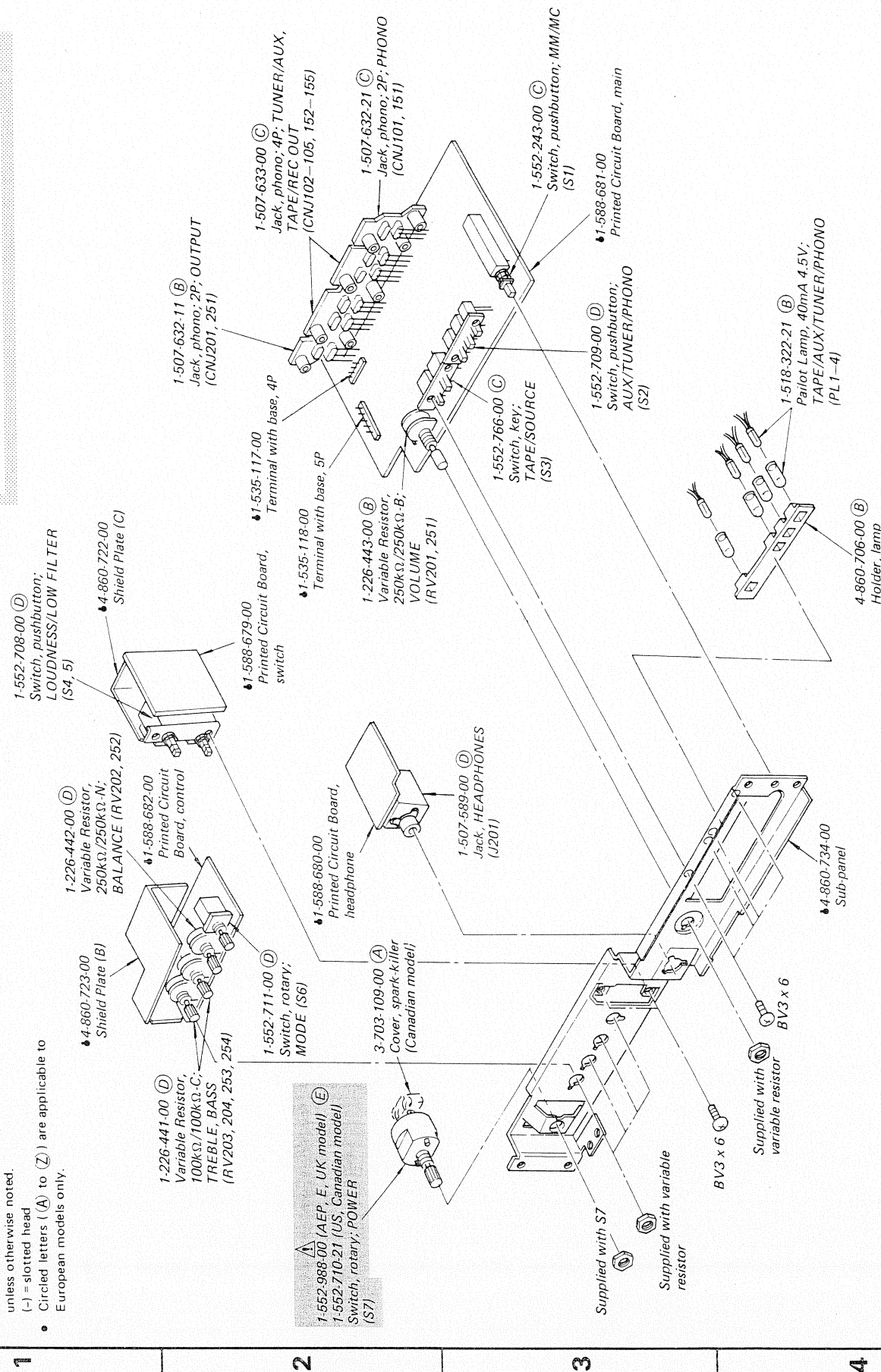
Note: The components identified by shading and mark A are critical for safety. Replace only with part number specified.

4-2.

Note: Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark A are critical for safety. Replace only with part number specified.

- Note:
- Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted.
  - (-) = slotted head
  - Circled letters (A to Z) are applicable to European models only.





- When sold as a system (GG-20F/20FB)
- ⊙ When sold as a unit (TAE-20F)

**Note:** Circled letters (A to Z) are applicable to European models only.

Ref. No.	Part No.	Description
<b>COIL</b>		
L101, 151	1-408-164-00	(B) 47μH, microinductor

## TRANSFORMERS

T301	⚠ 1-446-439-00	(K) Power (AEP, E, UK model)
T301	⚠ 1-446-440-00	Power (US, Canadian model)

## SWITCHES

S1	1-552-243-00	(C) Pushbutton, MM/MC
S2	1-552-709-00	(D) Pushbutton, AUX/TUNER/ PHONO
S3	1-552-766-00	(C) Key, TAPE/SOURCE
S4, 5	1-552-708-00	(D) Pushbutton, LOUDNESS/ LOW FILTER
S6	1-552-711-00	(D) Rotary, MODE

S7	⚠ 1-552-710-00	Rotary, POWER (US, Canadian model)
S7	⚠ 1-552-988-00	(E) Rotary, POWER (AEP, E, UK model)

## JACKS

CNJ101,151	1-507-632-21	(C) PHONO
CNJ102-105 CNJ152-155	1-507-633-00	(C) TUNER/AUX, TAPE/ REC OUT
CNJ201,251	1-507-632-11	(B) OUTPUT
J201	1-507-589-00	(D) HEADPHONES

## LAMPS

PL1-4	1-518-322-21	(B) Pilot, 40mA, 4.5V; TAPE/ AUX/TUNER/PHONO
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## MISCELLANEOUS

CN301,302 CN303,304	⚠ 1-526-636-00	(E) AC outlet
CN303	⚠ 1-526-574-00	AC outlet (US, Canadian model)
CP301	⚠ 1-231-341-00	Spark Killer (US, Canadian model)
CP302	⚠ 1-102-355-00	(B) Encapsulated Component, 0.01 x 2, 500V
F101	⚠ 1-532-149-00	(C) Fuse, T125mA (AEP, E, UK model)

**Note:** Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

	⚠ 1-231-326-11	(B) Encapsulated Component
	⚠ 1-526-576-21	Voltage Selector (E model)
	1-533-131-00	(A) Holder, fuse (AEP, E, UK model)
	⚠ 1-534-817-XX	(E) Cord, power (AEP model)
	⚠ 1-534-986-XX	Cord, power; parallel-blade plug (E model)
	● 1-535-117-00	Terminal with base, 4P
	● 1-535-118-00	Terminal with base, 5P
	⚠ 1-551-511-00	Cord, power (US, Canadian model)
	⚠ 1-551-530-00	(D) Cord, power; euro-plug (E model)
	⚠ 1-555-001-00	Cord, power (UK model)
	● 1-588-679-00	Printed Circuit Board, switch
	● 1-588-680-00	Printed Circuit Board, headphone
	● 1-588-681-00	Printed Circuit Board, main
	● 1-588-682-00	Printed Circuit Board, control

## ACCESSORIES AND PACKING MATERIALS

Part No.	Description
⊙ 1-551-734-11	Cord, connection; (RK-74A) (TAE-20F) (AEP, UK model)
⊙ 1-551-708-00	Cord, connection (TAE-20F) (AEP model)
3-770-682-21	(D) Manual, instruction; English
3-770-682-31	(I) Manual, instruction; French
3-770-682-51	(I) Manual, instruction; Spanish (GG-20F)
3-770-683-11	(I) Manual, instruction; GG-10F/10FB (AEP model)
● 3-770-683-21	Manual, instruction; GG-10F (US model)
3-770-683-51	Manual, instruction; GG-10F (E model)
⊙ 3-783-249-11	Manual, instruction (TAE-20F) (AEP, UK model)
4-860-646-00	(A) Sheet, protection
4-860-648-00	(C) Cushion
● 4-860-743-00	(J) Carton, TAE-20F
4-860-744-00	(J) Carton, TAE-20FB
⊙ 4-860-769-00	Carton (TAE-20F) (AEP, UK model)

- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

**Note:** The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



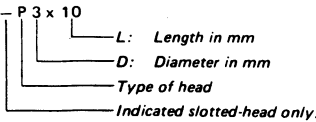
1/4 WATT CARBON RESISTORS Ⓐ

Note: Circled letter Ⓐ is applicable to European models only.

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00

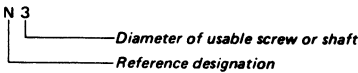
HARDWARE NOMENCLATURE

Screw:



Unless otherwise indicated, it means cross-recessed head (Phillips type).

Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

Sony Corporation

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